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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/729.694	12/05/2003	Jac H Kang	CU-3477 RJS	4582
26530	7590	11/22/2006	EXAMINER	
LADAS & PARRY LLP 224 SOUTH MICHIGAN AVENUE SUITE 1600 CHICAGO, IL 60604			GARCIA, JOANNIE A	
			ART UNIT	PAPER NUMBER
			2823	

DATE MAILED: 11/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Advisory Action  
Before the Filing of an Appeal Brief**

Application No.

10/729,694

Applicant(s)

KANG ET AL.

Examiner

Joannie A. Garcia

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--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 01 November 2006 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:

- a) ☒ The period for reply expires 3 months from the mailing date of the final rejection.  
b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**NOTICE OF APPEAL**

2. ☐ The Notice of Appeal was filed on \_\_\_\_\_. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

**AMENDMENTS**

3. ☐ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because  
(a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);  
(b) ☐ They raise the issue of new matter (see NOTE below);  
(c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or  
(d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: \_\_\_\_\_. (See 37 CFR 1.116 and 41.33(a)).

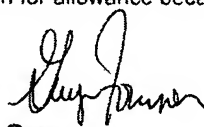
4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).  
5. ☐ Applicant's reply has overcome the following rejection(s): \_\_\_\_\_.  
6. ☐ Newly proposed or amended claim(s) \_\_\_\_\_ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).  
7. ☒ For purposes of appeal, the proposed amendment(s): a) ☐ will not be entered, or b) ☒ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.  
The status of the claim(s) is (or will be) as follows:  
Claim(s) allowed: none.  
Claim(s) objected to: none.  
Claim(s) rejected: 1 and 3-7.  
Claim(s) withdrawn from consideration: none.

**AFFIDAVIT OR OTHER EVIDENCE**

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).  
9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).  
10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

**REQUEST FOR RECONSIDERATION/OTHER**

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because:  
See attachments.  
12. ☐ Note the attached Information Disclosure Statement(s). (PTO/SB/08) Paper No(s). \_\_\_\_\_.  
13. ☐ Other: \_\_\_\_\_.

  
George Fourson  
Primary Examiner

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The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 3, 4, 6, and 7, remain rejected under 35 U.S.C. 102(e) as being anticipated by Hwang et al (U.S. Patent 6,548,853).

The rejection is maintained as stated in the Office Action mailed 08-08-06, and as stated below.

Hwang et al discloses forming an interlayer insulating film 3 on a semiconductor substrate 1, which includes a first contact hole 5 exposing a portion of the substrate (Figure 4A), forming storage node plug 9 filling the first contact (Figure 4A), forming a first insulating film 11, a first silicon nitride film 13, and a second insulating film 15 sequentially above the substrate inclusive of the storage node plug (Figure 4B), wherein the first insulating film has an etching rate faster than that of the first silicon nitride film (Column 6, lines 12-43), forming a second silicon nitride film 7 at least on the interlayer insulating film, before forming the first insulating film (Figure 4A, and Column 5, lines 50-62), forming a second contact hole 23a that exposes the storage node plug by removing the second insulating film, the first silicon nitride film, and the first insulating film partly (Figures 4C-4D), forming a recessed portion 25 at side surfaces of the second contact hole and below the silicon nitride film 13 by wet-etching the first insulating film remained in the second contact hole (Figure 4D, and Column 7, lines 5-23), forming a storage node electrode 27 of the capacitor, which is connected to the storage node plug, by filling the second contact hole inclusive of the recessed portion (Figure 4E), removing the remained second insulating film (Figure 4F, and Column 8, lines 25-35), forming a

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dielectric film 31 on the storage node electrode, and forming a plate electrode 33 on the dielectric film and the silicon nitride film (Figure 4F). Hwang et al also discloses the use of BPSG or PSG as insulating material (Column 3, lines 25-39, and Column 6, lines 12-43).

Applicant argues that Hwang et al does not teach forming a recessed portion below the silicon nitride film. However, as discussed above, Hwang et al discloses, forming a recessed portion 25 at side surfaces of the second contact hole and below the silicon nitride film 13 by wet-etching the first insulating film remained in the second contact hole (Figure 4D, and Column 7, lines 5-23).

Claim 5 is remains rejected under 35 U.S.C. 103(a) as being unpatentable over Hwang et al as applied to claims 1, 3, 4, 6, and 7, above, and further in view of the following comments.

The rejection is maintained as stated in the Office Action mailed 08-08-06, and as stated below.

Hwang et al discloses the claimed invention except for the thickness of the second insulating film. It would have been obvious to one having ordinary skill in the art at the time the invention was made to determine a suitable thickness, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

In addition, the selection of a suitable thickness for the second insulating film, it's obvious because it is a matter of determining optimum process conditions by routine

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experimentation with a limited number of species of result effective variables. These claims are prima facie obvious without showing that the claimed ranges achieve unexpected results relative to the prior art range. In re Woodruff, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also In re Huang, 40 USPQ2d 1685, 1688 (Fed. Cir. 1996)(claimed ranges or a result effective variable, which do not overlap the prior art ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art). See also In re Boesch, 205 USPQ 215 (CCPA) (discovery of optimum value of result effective variable in known process is ordinarily within skill or art) and In re Aller, 105 USPQ 233 (CCPA 1995) (selection of optimum ranges within prior art general conditions is obvious).

Note that the specification contains no disclosure of either the critical nature of the claimed thickness or any unexpected results arising therefrom. Where patentability it's said to be based upon particular chosen thicknesses or upon another variable recited in a claim, the Applicant must show that the chosen thicknesses are critical. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Applicant argues that Hwang et al does not teach forming the silicon nitride film above the first insulating layer and below the second insulating layer. However, Hwang et al discloses forming a first insulating film 11, a first silicon nitride film 13, and a second insulating film 15 sequentially above the substrate inclusive of the storage node plug (Figures 4A-4B, and Column 5, lines 54-62), therefore achieving formation of the silicon nitride film 13 above the first insulating layer 11 and below the second insulating layer 15.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joannie García whose telephone number is (571) 272-1861. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith, can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



JAG

November 15, 2006

GFourson  
Primary Examiner

George Fourson  
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